

Myidae from Australian waters (Mollusca, Bivalvia)

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Abstract

Cryptomya (*Venatomya*) *blackburnae* sp.nov from mideastern Queensland, Northern Territory and north Western Australia is described and figured. (*V.*) *elliptica* (A.Adams, 1851) from New South Wales and Queensland is refigured and a detailed description given. *Tugonia* (*Distugonia*) *inopinata* (Iredale, 1936) from New South Wales and Queensland is briefly discussed. A lectotype is designated for *Sphaenia elliptica* A.Adams, 1851.

Key words: Myidae, Australia.

Introduction

The Myidae is a family of mainly infaunal burrowing bivalves with a long, single siphonal process. Myid species are characterised by a fragile, chalky shell with a moderate to wide posterior gape and a large projecting chondropore in the left valve. Most species live buried in sand or mud to depths of 20cm. Some burrow into soft rock. The group is relatively small with about 20 species worldwide (Boss 1982). Myids are comparatively well known in the Northern Hemisphere (Lamy 1927; Habe 1951; Laursen 1966; Bernard 1979; Backeljau 1982; Stökland 1985), particularly through the widespread introduction from North America to Europe in the 17th century, of the large commercially fished *Mya arenaria* (Linnaeus, 1758) (Foster 1946). The family is also well represented in the boreal fossil record (Keen 1969). Fewer Recent species appear to have been documented from the Southern Hemisphere and only two have been hitherto described from Australia. No Recent or fossil myids are known from New Zealand, but Tertiary fossils have been found in Antarctica (Zinsmeister 1984; Stilwell & Zinsmeister 1992). In this context the discovery of a new species in waters of northern Australia is noteworthy. Examination of the extensive molluscan collection of the Australian Museum, Sydney confirmed that the Myidae is not well represented in Australian waters. However, given the low profile of the family in the literature and the cryptic habits and small size of some of the species, additional representatives may yet be described. In order to raise the perspective of this family in the contemporary literature the two previously described species are refigured. No live material has been examined; all the specimens used in the study were collected dead.

Previous Studies

The first record of the family in Australia was of *Sphaenia elliptica* described by A.Adams (1851) from Sydney, New South Wales. Subsequently placed in *Cryptomya* (see Angas 1871; Hedley 1913) this species was considered worthy of subgeneric recognition by Iredale (1930) who erected *Venatomya* to accommodate it. Keen (1969) recognised *Venatomya* as a valid subgenus, differing from *Cryptomya* s.s. by having a small, variably sized pallial sinus (pallial sinus absent in *Cryptomya* s.s.) and small anterior tooth in front of the chondropore in the right valve (absent in *Cryptomya* s.s.).

Eighty-five years after the description of this species, *Distugonia inopinata* Iredale, 1936 was described from Sydney Harbour dredgings. While similar to *Tugonia* Gray, 1842 and *Tugonella* Jousseau, 1891, *Distugonia* differs in shape and in having weak, concentric growth lines and a small, attenuated rostrum. Keen (1969) considered that *Distugonia* was only subgenerically distinct from *Tugonia* s.s. differing in its more extended rostrum and concentric sculpture (radial or reticulate in *Tugonia* s.s.). *Tugonia* differs from *Cryptomya* in having an attenuated rostrum (wide in *Cryptomya*) and inflated body with umbones situated toward the posterior (*Cryptomya* not inflated and almost equilateral).

Materials and Methods

All specimens used in this study derive from the collections of the Australian Museum, Sydney (AMS), the Museum and Art Gallery of the Northern Territory, Darwin (NTM), The Natural History Museum, London (BMNH) and the Western Australian Museum, Perth (WAM). A search of the Queensland Museum, Brisbane did not reveal any additional specimens.

Shell measurements were made using vernier calipers according to the method outlined in Fig. 1.

Morphological abbreviations used: lv, left valve; rv, right valve; pv, paired valves.

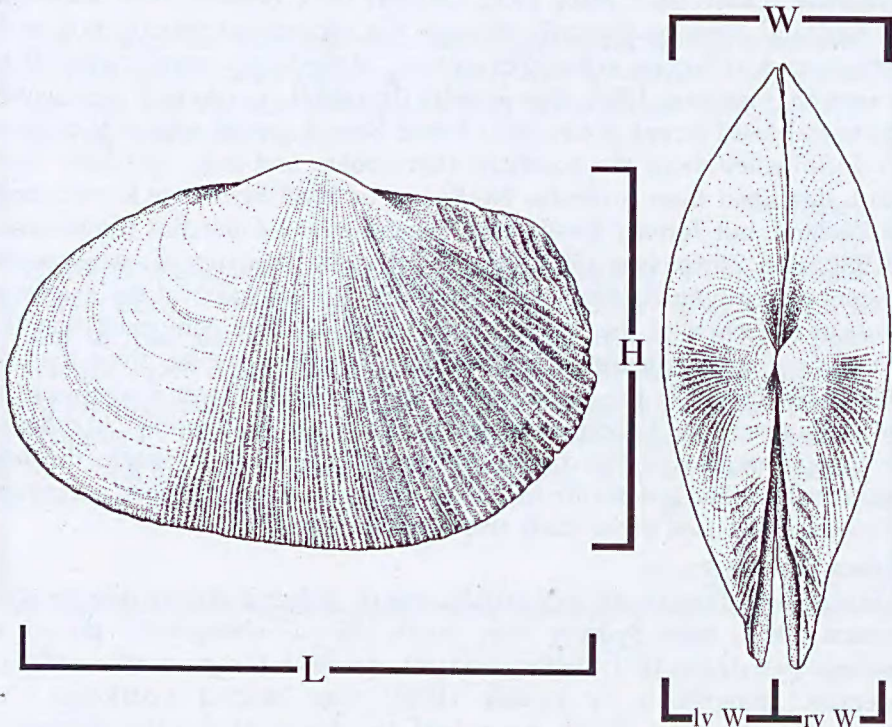


Figure 1. Shell measurements of *Cryptomya* (*Venatomya*) and *Tugonia* (*Distugonia*). L = length, H = height, W = width of conjoined valves, lv W = left valve width, rv W = right valve width.

Systematics

The systematic arrangement follows Keen (1969).

Order **MYOIDA** Stoliczka, 1870
Suborder **MYINA** Stoliczka, 1870
Superfamily **MYOIDEA** Lamarck, 1809
Family **MYIDAE** Lamarck, 1809
Genus **Cryptomya** Conrad, 1848

Cryptomya Conrad, 1848: 121.

Type species: *Sphaenia californica* Conrad, 1837 - by monotypy. Recent, Indo-Pacific.

Diagnosis: Narrowly gaping; chondropore in lv large, with triangular anterior portion in front of anterior ridge as in *Mya*; rv with an inconspicuous, subumbonal chondropore; posterior gape and pallial sinus obscure.

Subgenus **Venatomya** Iredale, 1930

Venatomya Iredale, 1930: 283.

Type species: *Sphaenia elliptica* A. Adams, 1851 - by original designation. Recent, Indo-Pacific.

Diagnosis: Small anterior cardinal tooth in front of chondropore in rv; pallial sinus variable in size.

Cryptomya (Venatomya) blackburnae sp. nov.

(Fig. 2a-e)

Etymology: For Lady Helen Blackburn who collected and presented the holotype to the Australian Museum.

Description: Shell to 48 mm in length; elongate-ovate, wider posteriorly; equivalve, approximately equilateral. Umbones moderately inflated, rising above dorsal margin. Lunule obscure, lanceolate, longitudinally striate. Escutcheon long. Antero-dorsal margin long, convex, rounded terminally at the antero-ventral margin; postero-dorsal margin almost straight, angulate at the posterior margin; posterior margin slightly convex, gaping; ventral margin widely convex posteriorly then almost straight and rising to anterior margin termination. Each valve of the shell with an ill-defined posterior fold extending from the umbo to the postero-ventral margin. Sculpture on anterior third of shell consisting of dense concentric growth striae; whole shell granulated, medially with numerous radial grooves extending from the umbo to the ventral margin, becoming more pronounced posteriorly, visible internally. Posterior fold with stronger concentric grooves to dorsal margin and devoid of any radial sculpture. Posterior half of shell with few concentric growth striae. Hinge of lv with shallow, spoon-shaped chondropore extending posteriorly. Hinge of rv with chondropore horizontally depressed under umbo and a small tooth situated

slightly in front of the chondropore. Colour white internally and externally. Pallial sinus wide, shallow, barely visible.

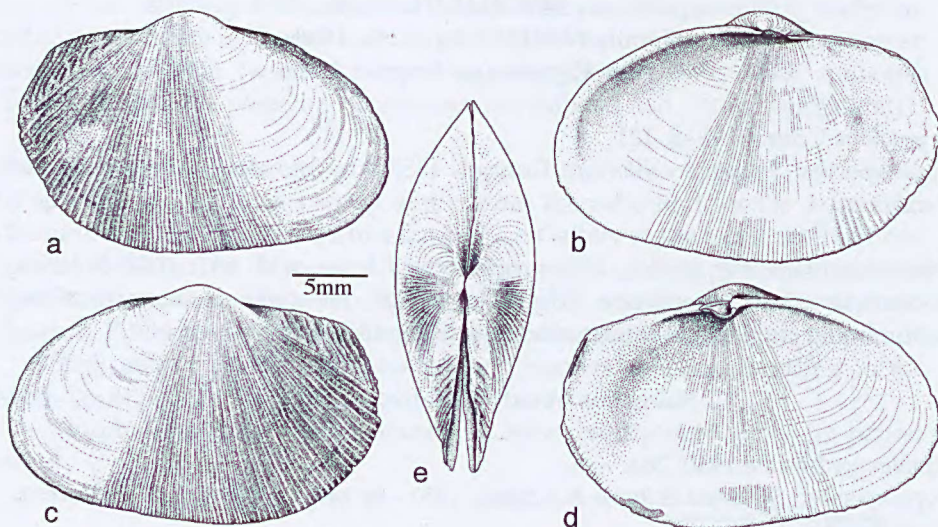


Figure 2. *Cryptomya (Venatomya) blackburnae* sp. nov. AMS C304578, Port Keats, Northern Territory, holotype. a,b, right valve; c,d, left valve; e, top view. Scale line as marked. [Drawings by A.Hill].

Material Examined

Holotype: 1 pv, AMS C304578, 14°05'-14°15'S, 129°35'E, Port Keats, Northern Territory, found on beach after rough weather. Length 24.7 mm, height 16.5mm, width of pv 9.7 mm.

Paratypes: Queensland: 1 lv, AMS C73227, 17°29'S, 140°50'E, Karumba, Gulf of Carpentaria. Northern Territory: 3 pv, 1 lv, 2 rv, NTM P3517; 12 rv, 5 lv, NTM P2801; 1 rv, NTM P4229; 1 pv, 1 rv, 2 lv, NTM P5152 - all 12°21'S, 130°53.3'E, Free Beach, adjacent to outlet of Sandy Creek, NE of Casuarina Beach, Darwin; 3 lv, NTM P4369, 12°19.5'S, 131°00.8'E, north of Howard River, western end of Gunn Beach, Shoal Bay E of Darwin; 2 lv, AMS C307049, 11°29'S, 132°02'E, Cape Bedwell, SW Cobourg Peninsula; 2 lv, AMS C307052, 14°00'S, 136°25'E, Groote Eylandt, Gulf of Carpentaria; 75 rv, 5 lv, AMS C307050, 12°00'S 134°27'E, Boucaut Bay, Arnhem Land; 1 rv, AMS C307051, 12°15'S, 136°53'E, Yirrkala, Gove Peninsula, Arnhem Land; 3 lv, 5 rv, WAM 108.96, Port Essington, intertidal in muddy sand, Aug 1986. Western Australia: 4 lv, 1 rv, WAM 109.96, Mitchell River Estuary, 20 km S of Pickering Point, Jul 1977.

Largest paratype: 1 lv, WAM 109.96, Mitchell River Estuary, 20 km S of Pickering Point, length 48.2 mm, height 28.7 mm, width of lv 9.5 mm.

Other material: Queensland: 1 lv, juvenile, AMS C307058, 23°49'S, 151°22'E,

Facing I., Port Curtis; 1 lv, AMS C307057, 23°17'S, 150°50'E, Zilzie Point, Yeppoon. Northern Territory: 1 lv, juvenile, AMS C307074, 9°18'S, 133°38'E, 230 km N of Goulburn I, dredged.

Habitat: Unknown. Shells examined were dead specimens, dredged or found on beach.

Distribution: Mideastern Queensland, Northern Territory and north Western Australia.

Remarks: *Cryptomya (Venatomya) blackburnae* sp.nov. can be distinguished from *C. (V.) elliptica* (A.Adams) by the presence of strong concentric ridges in the posterior area. *C. (V.) elliptica* is more elliptic in shape and lacks the attenuate anterior and wide posterior margin of *C. (V.) blackburnae*.

Cryptomya (Venatomya) elliptica (A.Adams, 1851)
(Fig. 3a-d)

Description: Shell to 23.4 mm in length; elliptical, with an obscure posterior angle which extends from the umbo to the postero-ventral margin, moderately compressed; umbones low, rising only slightly above dorsal margin. Sculpture of strong radial grooves medially which are absent at the anterior third and on the posterior area. Colour white internally and externally.

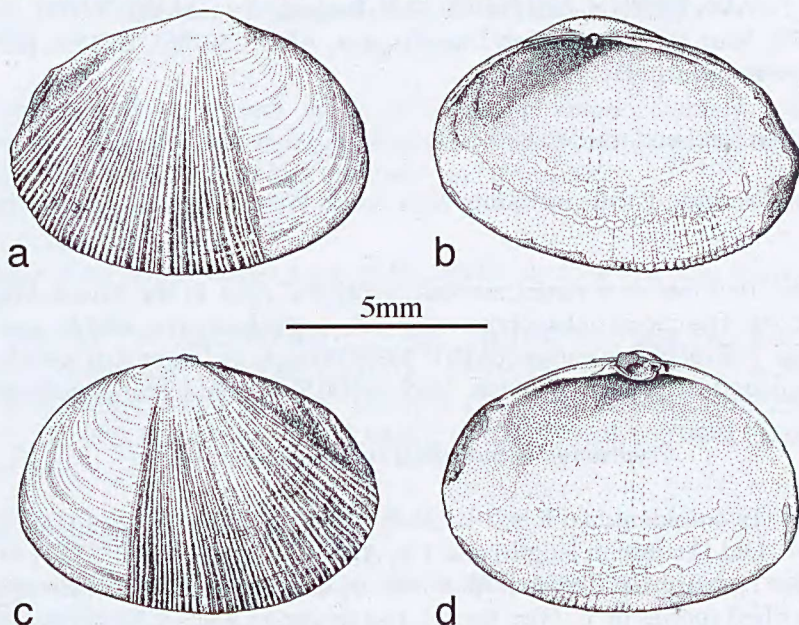


Figure 3. *Cryptomya (Venatomya) elliptica* (Adams, 1851). AMS C67994, Gunnamatta Bay, Port Hacking, New South Wales. a,b, right valve; c,d, left valve. Scale line as marked. [Drawings by A.Hill].

Material Examined

Lectotype (here designated): 1 pv, BMNH 1907.10.28.145, Sydney, H. Harvey collection, in the Hanley collection, labelled co-type. Length 14.3 mm, height 9.1 mm, width of pv 6.5 mm.

Paralectotypes: 1 pv, 2 lv, 1 rv, BMNH 1995226, Sydney, 7 m, mud, Mr Strange.

Other material: New South Wales: 1 pv, 3 lv, 2rv, AMS C67994, 34°04'S, 151°09'E, Gunnamatta Bay, Port Hacking; 1 pv, AMS C16971, 33°50'-33°52'S, 151°12'-151°16'E, Port Jackson; 1 lv, AMS C307065, 33°33'S, 151°16'E, Patonga, Broken Bay; 1 lv, 33°48'S, 151°16'E, North Harbour, Sydney; 3 lv, 3rv, AMS C002434, 33°50'-33°50.6'S, 151°10.3'-151°10.7'E, Lane Cove River, Sydney, 5.5 m, black sandy mud; 2 lv, AMS C67993, 33°57'S, 151°10'E, Cooks River, Tempe, Botany Bay; 6 rv, 9 lv, AMS C307064, 33°48.3'S, 151°14.4'E, The Spit, Middle Harbour, Sydney; series, AMS C307060, 33°51'S, 151°11'E, off Morts Dock, Balmain, Sydney; 1 pv, AMS C307053, 33°50'-33°50.6'S, 151°10.3'-151°10.7'E, Lane Cove River, Sydney; 1 lv, AMS C307055, 32°43'S, 152°15'E, off Nelsons Bay, Port Stephens; 1 lv, AMS C12716, 33°10'S, 151°39'E, Catherine Hill Bay. Queensland: 1 lv, 1 rv, AMS C307061, juveniles, 25°18'S, 152°46'E, Dundowran, Hervey Bay; 1 rv, AMS C29727, 16°54'S, 145°23'E, Weary Bay; 4 lv, 20°04'S, 148°22'E, Main Beach, Bowen; 3 rv, 3 lv, AMS C307063, 27°34'S, 153°20'E, Coochiemudlo I., Cleveland; 2 lv, AMS C307056, 25°17'S, 152°50'E, Pialba, Hervey Bay; 15 rv, 4 lv, AMS C10073, 18°40'S, 146°33'E, Palm I.; 8 rv, 10 lv, AMS C307066, 25°18'S, 152°46'E, Dundowran Beach, Hervey Bay; 19 rv, 8 lv, AMS C41625, 15°32'S, 145°17'E, off Annan River mouth; 1 rv, AMS C307059, 27°15'S, 153°15'E, Moreton Bay; 1 lv, AMS C307068, 24°49'S, 152°28'E, Bargara; 1 rv, AMS C307070, 16°33'S, 145°29'E, Four Mile Beach, Port Douglas; 1 lv, AMS C307067, 25°18'S, 152°46'E, Dundowran Beach, Hervey Bay.

Habitat: In sand and mud to 8 m.

Distribution: Indo-Pacific including New South Wales, Queensland and the Red Sea.

Remarks: Two lots of material marked "syntypes" exist in the British Museum collections. The choice of lectotype was made on the basis of available specimen material. The lot of five valves (BMNH 1995226) included three that were broken and unpaired left and right valves. Hedley (1913) figured material from this lot.

Cryptomya (Venatomya) possible new species

Remarks: Two unidentified lots, 1 lv, AMS C307071, from 10°38'S, 142°35'E, E of Banks I., Qld (4.6 mm in length) and 1 lv, AMS C307072, from 11°37'S, 130°23'E, Bathurst I., Northern Territory (6.5 mm in length), appear to belong to an undescribed species of *C. (Venatomya)*. The specimen AMS C307071 is elongate with the umbo situated anteriorly, posterior attenuate and gaping at its termination. Sculpture consists of concentric ridges without any radial ridges as in the *C. (V.) blackburnae* sp. nov. The specimen AMS C307072 is similar to AMS C307071 but differs in having an internal fold extending obliquely from the

medial section of the shell posteriorly to the ventral margin. Its concentric sculpture consists of strong growth ridges with finer intervening ridges. Insufficient material currently exists to accurately determine the status of these specimens.

Genus **Tugonia** Gray, 1842

Tugonia Gray, 1842:

Type Species: *Mya anatina* Gmelin, 1791.

Diagnosis: Inflated, equivalve, inequilateral, beaks situated posteriorly; rostrum short, truncate, widely gaping, set off by a constriction; sculpture of radial or reticulate striae, stronger medially with concentric growth lines.

Subgenus **Tugonia (Distugonia)** Iredale, 1936

Distugonia Iredale, 1936:

Type Species: *Distugonia inopinata* Iredale, 1936 - by original designation. Recent, Australia-East Asia.

Diagnosis: Posterior area moderately attenuated; sculpture of concentric growth lines only.

Tugonia (Distugonia) inopinata (Iredale, 1936)

(Fig. 4a-b)

Description: Shell to 21 mm in length; inflated; anterior widely rounded; compressed ventrally and tapering posteriorly. Sculpture of strong concentric growth lines. Colour lime-white internally and externally.

Material examined

Holotype: New South Wales: 1 pv, AMS C60626, Sydney Harbour, New South Wales.

Other Material: 1 lv, AMS C304577, 33°50'S, 151°16'E, Sow and Pigs Reef, Port Jackson. Queensland: 1 pv, AMS C304574, 24°55'S, 152°29'E, Elliot River estuary; 1 rv, 1 lv, AMS C304575, 24°55'S, 152°29'E, Elliot Heads; 1 lv, AMS C304576, 25°15'S, 152°49'E, Point Vernon; 1 lv, AMS C307075, 23°15'S, 150°49'E, Emu Park, Keppel Bay.

Habitat: In littoral sand.

Distribution: Central-eastern New South Wales to central east coast of Queensland.

Remarks: The unusual shape of *D. inopinata* readily distinguishes it from the preceding species. The greatly swollen posterior and laterally compressed anterior ends contrast with the more regularly globose shells of *Cryptomya* (*Venatomya*) spp.

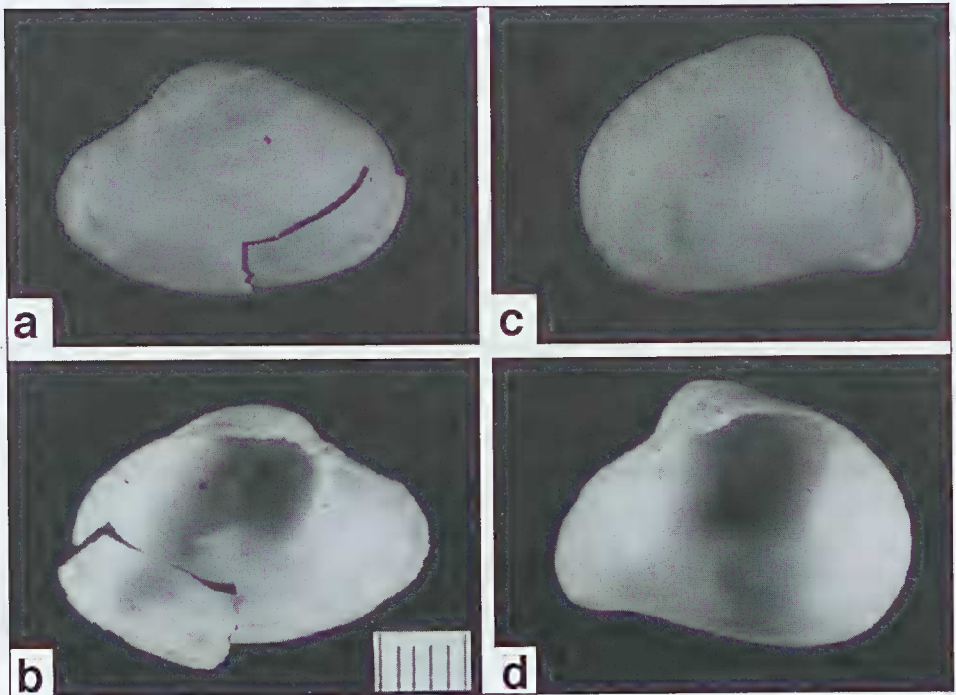


Figure 4. *Tugonia (Distugonia) inopinata* (Iredale, 1936). AMS C60626, Sydney Harbour, New South Wales, holotype. a,b, right valve; c,d, left valve. Scale lines = 1 mm.

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